

**MISSOURI DEPARTMENT OF
AGRICULTURE**



Division of Weights and Measures

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The Division of Weights and Measures "An Overview"

The Weights and Measures Division interacts with consumers as much or more often than any other division — though because of their successes you'd never know it. The work performed by the Weights and Measures Division touches the lives of all Missourians. Known as the department's consumer protection arm, the division protects buyers and sellers whenever goods and services are exchanged. Every time you check out at a grocery store, take a ride in a taxi, buy a pound of hamburger or fill your vehicle with gas, the Weights and Measures Division makes sure you get what you paid for. Division staff inspects large and small scales, scanning devices, gasoline dispensers, fuel delivery truck meters, timing devices, thermometers, grain moisture meters and prepackaged merchandise, to ensure every transaction is a fair deal both for the buyer and seller. In addition, the division's Fuel Quality Program ensures that service stations post correct octane levels on pumps and each year perform thousands of tests on fuel samples to insure they meet the state's quality standards. The division's Petroleum/Propane Program performs safety checks on service stations, propane storage facilities and petroleum and propane delivery trucks. Finally, the division's Device and Commodity Program routinely conducts egg inspections for quality and proper grading and milk for price determination.

The division's inspection staff visits thousands of businesses annually insuring that equity prevails in the marketplace. Consumer confidence can only be gained by ensuring that shoppers get what they pay for.

The division is deeply committed in providing the maximum consumer protection possible in an efficient and effective manner. If there is a continued shortfall in general revenue resources, the efficiency, productivity and in many cases quality of inspections will be affected. In the long term, it is hoped that the revenue stream into Missouri coffers will increase allowing the restoration of funding that will give the division the opportunity to address critical needs.

Division Programs

The Device & Commodity Inspection Program- is responsible for monitoring all commercial transactions throughout the state where goods are weighed, counted, or measured to insure equity in the marketplace. In addition to insuring the accuracy of commercial weighing and measuring devices, scanning and coding databases are monitored to insure accuracy of advertised prices and point-of-sale equipment systems. Program personnel monitor the sale of prepackaged merchandise to insure that consumers are paying for the product only and not the packaging. This program also insures that milk products are not sold below cost and that eggs offered for sale for consumer consumption meet United States Department of Agriculture (USDA) grade standards. The Device and Commodity Inspection Program scrutinizes meat sales advertising to prevent unfair or deceptive selling practices in the marketing of agricultural meat products. This program has been charged with enforcing legislation that was passed in 1999 which requires businesses to identify the country of origin and label foreign meat. The program also administers a registration program for service technicians who install and/or repair weighing and measuring devices.

The inspection program is comprised of twenty-four full-time employees. Program Administrator Steve Gill manages the program. Jean Kliethermes, currently the program's only

office support staff (one is open), is responsible for collecting and transmitting scale inspection and egg licensing fees, and milk processor and distributor licensing fees, as well as maintaining records relating to program inspections. Twenty-one employees are assigned to territories throughout the state and work out of their homes. The program has one Weights & Measures Inspector II (chief inspector) who is responsible for employee training and investigative work as well as having an assigned territory. Six Weights & Measures Inspectors are assigned to inspect large-capacity scales (over 1,000 pounds) used in commercial transactions for accuracy and correctness. The remaining fourteen Weights and Measures Inspectors are responsible for insuring the accuracy of commercial weighing devices (under 1,000 pounds), assuring that packaging and labeling and method of sale of products is appropriate, inspecting eggs to determine they meet USDA standards, checking milk prices to assure compliance with the Unfair Milk Sales Practices Act, verifying the prices of items sold over scanning systems, and insuring meat is labeled appropriately (country of origin).



Testing eggs for quality



Scale accuracy verification



Taxi meter inspections



Livestock scale inspection



Price verification (scanner)



Package inspection

Output Measures	
Scale Inspections	23,280
Scanning Device Inspections	498
Egg Inspections	3,630
Milk Inspections	4,017
Packages Weighed	13,894
Taximeter Inspections	100
Country of Origin Labeling Inspections	693

Fuel Quality Program- The fuel quality program is responsible for assuring that all motor fuels and other fuels meet minimum quality specifications. Through a vigorous program of inspection, sampling, and testing, the division protects Missouri consumers of petroleum fuels and products.

The direct benefits are threefold: First, economic benefits are derived from consumers receiving quality products and services, especially in the areas of fuel quality, vehicle efficiency, and

vehicle maintenance. Second, by monitoring compliance with air pollution control program and fuel quality specifications, the division promotes better air quality and more efficient fuel use. Third, the program supports fair competition and ethical business practices.

Program Administrator Ron Hayes manages the Fuel Quality Program and Petroleum Laboratory and is assisted by Kevin Upschulte, operations supervisor and Senior Office Assistant Sandy Wyss. Five Chemists are assigned to the laboratory to carry out testing for the quality and safety aspects of fuels. Three Fuel Device Safety Inspectors are responsible for the field collection of fuel samples and those site inspections related to safety, quality, and labeling.



Octane testing



Distillation units



Diesel fuel lubricity testing equipment



Cloud point testing equipment

Output Measures	
API Gravity Tests	3,418
Cloud Point Tests	1,963
Distillation Tests	8,925
Flash Point Tests	2,264
FTIR Tests	6,991
Octane Tests	5,284
Oxygenate Tests	3,602
Reid Vapor Tests	6,745
Saybolt Color tests	393
Sulphur Tests	5,882
Viscosity tests	597
Water & Sediments Tests	8,652

The Metrology Laboratory/Moisture Meter Program- is housed within the Weights and Measures Division and provides a very specialized service to the businesses and industries of Missouri and several neighboring states. Additionally, the laboratory supports Weights and Measures inspection programs that conduct device testing for accuracy. The laboratory's responsibilities include performing mass, length, volume, and temperature measurement calibrations that are traceable to the National Institute of Standards and Technology. Metrology is the basis of all standardization of measurement from the aviation industry to pharmaceutical manufacturers. Traceability to the national standards along with quality assurance to the ISO 17025 guide is mandated in most industry quality manuals.

The moisture meter program is responsible for ensuring the accuracy of grain moisture meters and associated equipment such as scales, thermometers, and charts. Weights and Measures officials annually inspect and certify moisture-measuring equipment. The standards and inspection procedures for grain moisture meters are contained in NIST Handbook 44 Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices.

Bob Wittenberger, Metrologist/Laboratory Manager administers the Metrology Laboratory and Moisture Meter Program. Tom Hughes, Metrology Specialist, provides support for the metrology program as well as the moisture meter program and laboratory. Stacey Steck, Senior Office Assistant provides support for program administration. One Weights and Measures field inspector works out of his home conducting inspections. This last year, a former employee that has retired, came back for approximately three months assisting with moisture meter inspections in northern Missouri.



Large weights awaiting calibration



Precision weight calibration



Grain samples awaiting testing



Moisture meter used for grain testing

Output Measures	
Moisture Meter Inspections	461
Certificates of test Issued	491
Weights Certified	6,002
Volume Standards Certified	223
Scales tested	520
Thermometers tested	83

The Petroleum/Propane/Anhydrous Ammonia Program- provides a variety of services that ensures consumer protection and public safety across Missouri. Under this program, petroleum and propane fuel dispensers located at service stations, marinas, airports, bulk plants, pipeline and barge terminals and other retail/wholesale locations are inspected and tested for accuracy. This also includes propane/petroleum fuel delivery truck meters.

To protect the public from fire, explosion and injury; safety inspections are performed at service stations, marinas, airports, terminals, bulk storage plants, schools, nursing homes, industrial commercial sites and other public institutions. Safety inspections also include propane motor fuel systems on school buses, fuel delivery trucks, bulk tanks, cylinders and aboveground petroleum fuel storage tanks.

In 2001, in cooperation with the Department of Natural Resources, Environmental Emergency Response, the program implemented an emergency response program. Five inspectors from the program respond to requests from the Department of Natural Resources, fire departments and the State Fire Marshall, to assist with emergencies involving petroleum, propane and anhydrous ammonia products. This program not only accentuates public safety and assists other public safety agencies, but also identifies the causes of accidents. This information is used in accident prevention and training.

The inspection program works cooperatively with a number of state and federal agencies, including the Environmental Protection Agency, Federal Trade Commission, Missouri Highway Patrol, Department of Natural Resources, Department of Transportation, Internal Revenue Service, Department of Revenue and the State Fire Marshall.

The program is managed by Program Administrator Kerry Brettschneider and implemented across the state by a staff of field inspectors working out of their homes. Each inspector is assigned specific inspections duties located in a territory of designated counties. Twenty Fuel Device Safety Inspectors are assigned to petroleum safety and device inspections and five Fuel Device Safety Inspectors are responsible for propane and anhydrous ammonia inspections. Investigator/Trainer John Albert provides training and technical support to employees and industry and assists the program administrator with investigations. Chief Inspector Curtis Wall provides inspection support and assistance to the field staff and assists the program administrator and investigator/trainer. Senior Office Staff Joan Whittle, Stacy Hall and Meghan Rodriguez provide support for program administration.



Gas pump inspections



Service station inspections



Propane bulk plant inspection



Propane delivery truck inspection



Calibration units for gas pump testing



Hazmat trained team for emergencies

Output Measures	
Fuel Dispenser Inspections	130,698
Propane Gas Meters Tested	1,531
Terminal Meters Tested	708
Terminal Meter Tests	2,073
Service Station Safety Requirements Issued	12,162
Propane Safety Inspections	3,993
Anhydrous Ammonia Safety Inspections	213

The Division in Review

Successes:

This last year the budget continued to be a challenge. However, even with the budget shortfall and spending constraints, the division had a number of successes. Most of the success was because of the cooperation and team effort of all division staff. The division intends to continue to build on its past years successes for the proceeding years. The following represents many of the division's successes during the last year.

Accounting-There continues to be some improvements in the accounting process, primarily in the Device and Commodity Program. Receivables within the Device and Commodities Program continue to remain at the lowest level in many years. There is a continued need for additional improvements in the accounting system that will require coordination with the fiscal office and IT.

Biodiesel & Premium Diesel-Because of the hard work of Ron Hayes and his staff in the Fuel Quality Program, the state of Missouri remains nationally recognized in assisting with the development of specifications for premium diesel and Biodiesel . Ron continues to work through ASTM and the National Conference on Weights and Measures on this and other important fuel quality issues.

Budget Preparation and Tracking-Each year the programs have struggled with budget preparation for the upcoming legislative session. It had been the program administrators desire to have the ability to sit down with the department's budget and planning person to discuss budget guidelines, preparation formats and department policy on decision items. This is being accomplished thanks to the department's budget and planning staff, especially Robin Perso.

Diesel Fuel Lubricity-The advent of low and ultra-low sulphur diesel fuels has prompted the need for a lubricity standard for diesel fuels. This need prompted ASTM to design a lubricity specification that will become effective on January 1, 2005. Ron Hayes, Fuel Quality Program, is a member of ASTM and has worked on this issue and brought it to the forefront in Missouri. Ron has obtained the testing equipment and has the knowledge to test the lubricity characteristics of diesel fuel. So far as we know, Missouri has the only laboratory in the United States with the capability to test for lubricity in diesel fuel.

Motor Carrier Safety- During the last year John Albert and Kerry Brettschneider have continued to work cooperatively with the Missouri Highway Patrol, Missouri Department of Transportation Division of Railroad and Motor Carrier Safety, the Federal Motor Carrier Safety Administration and the Missouri Motor Carriers Association. The group presented training workshops across the state promoting motor carrier safety and accident reduction. Because the program has been so successful, the Federal Motor Carrier Administration is looking at the program as a model for other states.

Productivity- All of the petroleum program's device and safety inspection staff have been assigned new gas pump-testing equipment. This equipment has revolutionized the

manner in which fuel dispensers are tested while also increasing productivity, enhancing employee safety and reducing the likelihood of injury from repetitive motion. Employees and management are very pleased with the new equipment.

Critical Issues:

There are a number of critical issues that continue to face the division and need to be addressed to insure the effectiveness and efficiency of the division and its programs. The division continues to work on those areas where inefficiencies and critical needs exist and if possible, will make necessary corrections. The division is however very dependent on outside assistance, such as IT support, to address many of its inefficiencies and critical needs. The following is a list of the division's most critical issues that will affect its operation for the foreseeable future.

Accounting- Centralized accounting is the most desirable system for the entire division. This would require a major overhaul in the division's accounting system including a change in the way the division programs code accounts and inspections. There would have to be a long-term commitment by both IT and the division to accomplish the required changes. Expected time frame could be as long as one-two years given the current IT workload.

Currently, in order to insure protection of inspection fee receipts, two division employees receive the inspection fees and post them to a receipt log for each program. Each program then posts from the receipt log to the respective account. This process, although effective, is redundant and somewhat time consuming. A review of the existing process is needed to determine if the process can be streamlined to be more effective and efficient.

Additionally, consideration should be given for a system that will allow payment of fees by credit card including e-payment. E-invoicing should be considered for those customers that want both e-invoicing and the ability to submit e-payments. These additional accounting avenues could add efficiency to the accounting process while also reducing accounts receivables.

There is also a need in the metrology laboratory accounting system for an automated accounts receivable aging process and a method of tracking and collecting accounts receivables. This would also include a write off policy and procedure for un-collectibles. The current accounting system does not incorporate a bill to address for invoicing.

Budget E & E (GR)-The continued reduction in the equipment and expense (E & E) portion of the general revenue budget is affecting the division's ability to meet its statutory mandates. This became a very critical issue for the FY 04 budget year resulting in the curtailment of large scale inspections for three and one-half months. There are also open GR positions that cannot be filled because of the lack of GR funds. Unless there are increased resources, the situation will get worse for the proceeding years as equipment problems increase and the cost of doing business continue to rise. E & E will have to be closely monitored on a monthly basis to insure the division stays in the black. This may mean intermittent and/or permanent curtailment of some of the division's regulatory activity.

Business Identification- Currently there is no uniform method by which the division programs identify the businesses they regulate. This can create problems for both the programs and the regulated industry since many of the programs regulate/inspect the same businesses. There is a very serious need for uniform business codes that can be utilized by all division programs. Changes in the business codes would require programming by IT and potentially a timeline of one-two years to make changes to the data within the database.

Calibrations- Calibrations for large weights (500 lb, 1,000 lb & 2,500 lb) are being done on an old 1968 Russell balance. The lack of single mass standards is requiring the metrology laboratory to utilize a build up standard for weight calibrations. This is very dangerous to the operator and also risks serious damage to the balance. Should the balance be damaged, no large mass calibrations could be done. The Russell Balance has a maximum capacity of only 2,500 pounds. The metrology laboratory is in serious need of funding for an electronic mass comparator to increase the capacity capability and efficiency of the laboratory while also enhancing the safety of laboratory employees.

Additionally, the 100 gallon volumetric standard used for calibrating test standards utilized by both division inspectors and industry service personnel is deteriorating. It needs to be replaced by a new, stainless steel, sensitive neck standard as soon as possible. This will help to maximize the accuracy of the Metrology Laboratory calibrations.

Data Access- The metrology laboratory provides calibration services to the division inspection staff and registered service persons. Service person registration is contingent on the timely calibration of weighing and measuring devices. The data for registration and calibration is segregated. In order for both processes to work effectively and efficiently, they must be integrated into a single database that is accessible to all division programs. Programming and support from IT is needed to alleviate the problem.

Database Conversion- Currently package checking and a portion of the propane inspection program are being tracked in an outdated Informix program/database. This is a program few people have knowledge about and has minimal IT support. There will be a time in the foreseeable future this program will cease to function. Since these databases are critical to package checking and propane inspections, it is imperative that they be converted into a "modern database" as soon as possible. This will require programming and support from IT.

Dispenser Design- As changes in fuel dispenser design occur, additional technological features are being incorporated into them. Technology changes not only impact the visual features of a dispenser but also its operational capabilities such as fuel blending. It is of utmost importance that the fuel quality laboratory, laboratory field staff and device and safety staff have the training to stay current with the operational features of fuel dispensers. It is important they have the knowledge and expertise to properly inspect the device and to diagnose its output parameters such as blending ratios.

Employee Training- Wayne Fritts, Chief Inspector, device and commodity program, feels their program is lacking in the area of employee training. It is felt that an investment in employee training increases the quality and efficiency of inspections while also boosting the morale and comfort level of all employees. The program staff and the

division director recognize that obtaining and/or increasing employee and industry training is a serious resource issue and will have to be addressed as a budget item or redirection of staff resources.

Enforcement Authority-Previous ethanol labeling legislation that amended Chapter 414 removed the fuel quality program's authority to place a stop sale on substandard fuel. This can seriously affect the program's ability to address substandard fuel problems in the marketplace and to provide adequate protection to consumers. Legislation must be passed that will restore that authority.

Fuel Composition-As environmental regulations change, fuel composition must also change to remain in compliance. Some components of the new generation fuels are/may be damaging to testing, storage and dispensing equipment. Currently, the Petroleum Inspection Program is experiencing damage to various components of testing equipment that is in constant exposure to ethanol blended fuels. This not only costs for repair of damaged equipment but also may affect the accuracy of device testing.

Additionally, air quality in Kansas City has been deteriorating for a number of years. Because of current EPA regulations, stage I vapor recovery is in place for terminals, transportation vessels and storage tanks. Unless air quality improves, stage II vapor recovery requirements will be put in place at the gas pump. If stage II becomes a reality, testing equipment will have to be retrofitted and procedural changes made. This could impact Petroleum Inspection Program with regard to fuel quality, device accuracy and device/premises safety.

It is important that the program continue to have the ability to stay on the cutting edge of technology for fuel quality, safety and device testing. This will help to circumvent problems that can impact the environment, public safety and device accuracy.

Fuel Quality Program IT Issues-The number one critical issue, and major problem for the fuel quality laboratory, is the lack of IT support. The laboratory's data management and database needs major revision and support. Many of the data issues evolve around connectivity and operational issues with testing equipment and a need for maximizing automation of the laboratory. The cost of operating the laboratory is very high; better data management including automation can increase the efficiency of the laboratory while reducing the cost of sample analysis.

Fuel Storage Tank Issues-Tank overfilling is one of the leading causes of fires and fuel spills at service stations and bulk storage plants. The current technology for overfill prevention is far less than perfect. Strong efforts by the inspection program will have to continue for the foreseeable future to find methods and technology that is effective in prevention. This can mitigate the exposure of public to injury and property damage.

Additionally, a large number of underground storage tank systems currently in use at service stations across Missouri have been retrofitted with fiberglass linings. This was an attempt to comply with the EPA environmental regulations. A number of the fiberglass-lined systems have failed. Failure of these systems exposes soil and groundwater to serious contamination and creates safety hazards to the public. There is also an impact on property values. It is important that the program continue to work cooperatively with the

tank section of the DNR Hazardous Waste Program to monitor underground tanks that are in service to circumvent as many problems as possible.

GPS-The petroleum program needs additional work completed by DNR, DGLS on geologic mapping of the state. When the data is completed, it will be utilized in conjunction with the petroleum inspection database as an overlay to determine those sites that pose the greatest risk to soil and surface water resources. Additionally, the information will be utilized when there is a product release to determine the path of migration and a plan of action. Both geology and topography mapping are required for an effective risk assessment and emergency response. The use of GPS can also help the fuel quality laboratory with facility and data tracking.

Laboratory Equipment- Environmental regulations are impacting the quality and composition of fuels. There is a need to upgrade the fuel quality laboratory's equipment used for testing the sulfur content of fuels. Testing must also be done to insure compliance with fuel quality standards and the fuels lubricity characteristics. As environmental regulations for fuels increase, so will the testing requirements of the laboratory.

Loss of Personnel-Loss of personnel because of budget shortfalls is beginning to affect division programs ability to provide the level of consumer protection required. As positions are lost, vacated counties must be assigned to existing employees. This means employees may be assigned a number of counties and inspections well beyond what is doable. This situation not only decreases the program's effectiveness and efficiency but also drives up the cost of doing business while reducing revenue from inspections.

Package Checking Scales-The type of scale that is currently used by Device and Commodity inspectors is prone to drift. This is affecting thousands of inspections routinely conducted by the program's small-scale inspection staff and leaves to question the accuracy and quality of the inspections. Last year five new scales were purchased and are being assigned to those inspectors with the highest productivity. Unless the scales currently used by the remaining staff are replaced, there may be a time in the foreseeable future that package inspections are either limited or partially curtailed. This will impact our ability to provide an adequate level of consumer protection.

Standards calibration-There is a serious need to have the metrology laboratory standards re-certified by the United States Department of Commerce, National Institute of Standards and Technology. It is critical that this be done on a routine basis to insure that the standards the laboratory uses to calibrate the states secondary standards (those used by the inspection staff) are accurate and traceable to national uniform standards.

Technology Changes-Technology changes in weighing and measuring devices are occurring at a very rapid rate. In order to insure that programs are inspecting new technology devices appropriately, there must be a mechanism in place for continuous updates for device installation and inspection. Technology changes must also be communicated to inspections staff through a timely training process.

Vehicles-The vehicles used by personnel in the division's general revenue supported programs are high mileage and often require expensive repairs. Trucks for large-scale

inspections routinely cost much more than other fleet vehicles to repair. They, because of their application, have many more operating hours on the engines than the odometer reflects. This is due to weight lifting requirements of inspections. The cost of vehicle operation and repair places a very serious burden on the already stretched E & E resources. The efficiency of inspections will decline and cost will rise unless old worn out vehicles are replaced. The general revenue supported programs are at a critical point at this time. The division personnel travel approximately 1.2 million miles each year conducting inspections and providing service to Missouri consumers.

Working Standards-There has been a measurable increase in requests for large metric mass calibrations (100 kg through 750 kg) that require a conversion from pound weight (summation) to metric denominations. The ability to purchase metric working standards would reduce the uncertainty of calibrations and prevent damage to existing standards used in summation.

Division Structure

